Test Equipment Depot
1-800-517-8431
99 Washington Street
Melrose, MA 02176
Phone 781-665-1400
Toll Free 1-800-517-8431
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OHAUS®

Navigator® Balances

Instruction Manual

1. INTRODUCTION

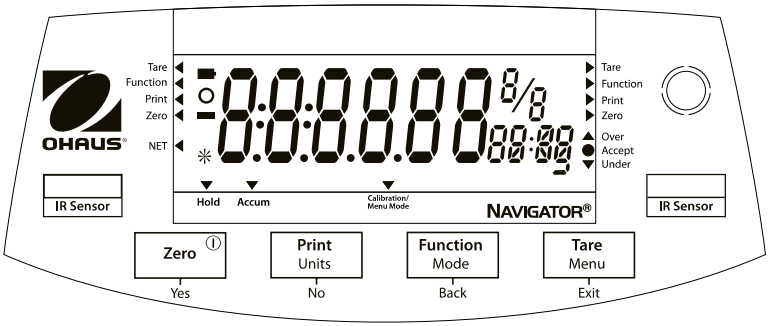
This manual contains installation, operation and maintenance instructions for the Navigator® Series. Please read the manual completely before using the balance.

1.1 Safety Precautions

Please follow these safety precautions:

- Verify that the AC Adapter input voltage matches the local AC power supply.
- Only use the balance in dry locations.
- Do not operate the balance in hostile environments.
- Do not drop loads on the platform.
- Service should be performed only by authorized personnel.

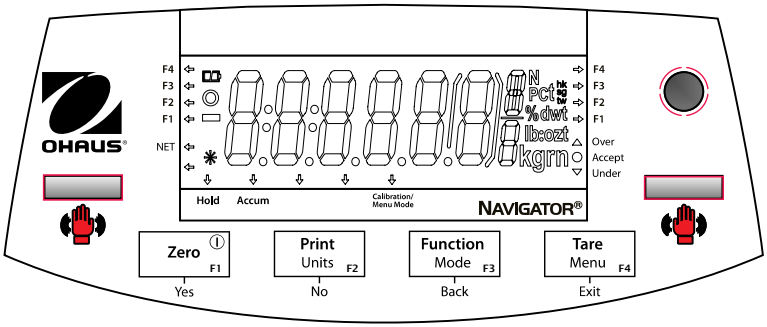
1.2. Controls



Standard (non-approved) models – shown with LED display.

Button	Functions
Zero ⏻ Yes	Short Press (when on): Sets display to zero (when off): Turns balance on Long Press (when on): Turns the balance off Short Press (in Menu): Selects/accepts displayed setting
Print Units No	Short Press: See Interface Manual for operation description. Long Press: Toggles through active units Short Press (in Menu): Toggles through available settings
Function Mode Back	Short Press: Selects function setting Long Press: Selects active Mode Short Press (in Menu): returns to previous settings
Tare Menu Exit	Short Press: Enter / clear a Tare value Long Press: Enters User Menu Short Press (in Menu): Quickly exit User Menu
IR Sensor-Left IR Sensor-Right	IR Sensors can be programmed to act as "touchless" buttons. See the User Menu section 4.3 for the available settings.

The IR Sensors can be activated by a hand or other object that is placed about 12mm (½ inch) above the sensor locations. The sensor activation distance will vary based on the reflective nature of the object. If unwanted activations occur due to unique situations the sensors can be turned off.



Approved models – shown with LCD display.

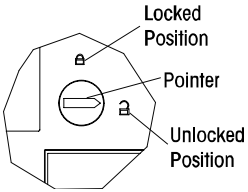
2. INSTALLATION

2.1 Package Contents

- Balance
- Pan
- Power Adapter
- Instruction Manual
- Warranty Card

2.2 Transportation Lock

The Transportation Lock is located under the balance. Rotate the pointer to the unlocked position.

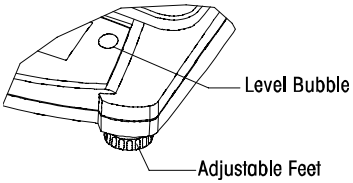


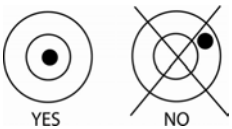
Note: No shipping lock on Approved models.

2.3 Location

Use the balance on a firm, steady surface. Avoid locations with excessive air current, vibrations, heat sources, or rapid temperature changes.

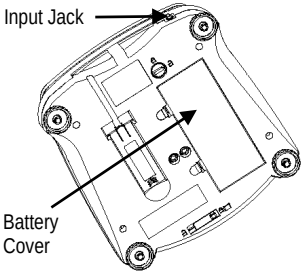
Adjust the leveling feet so the bubble is centered in the circle.



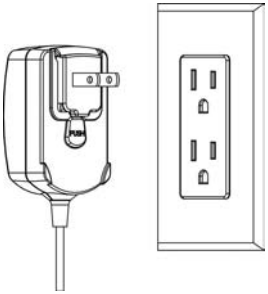


2.4 Power

The AC Adapter is used to power the balance when battery power is not needed.



Connect the AC Adapter plug to the input jack.



Connect AC Adapter to the proper AC supply.

Battery installation (without optional internal battery):
Remove battery cover and install 4 batteries using the polarity indications as shown in the compartment.

Optional rechargeable battery (NVL and NVT models only):
Balances with the optional rechargeable battery will need to be charged for 12 hours before the balance can be operated on battery power for the first time. The battery is protected from overcharging so the balance can remain connected to the AC power. When the battery is fully charged the battery indicator on the display will stop blinking.

To remove the rechargeable battery option and install C cell batteries, reference the Recharging Battery Option instruction manual for step by step instructions as well as disposal instructions.

Caution: Risk of explosion can occur if the rechargeable battery is replaced with the wrong type or if it is not properly connected.

2.5 Initial Calibration

When the balance is first installed it should be calibrated to ensure accurate results.

Press and hold Menu until [MENU] (Menu) is displayed. When the button is released, the display will display [.C.A.L.]. Press Yes to accept, [SPAN] will then be shown. Press Yes again to begin the span calibration. [--C--] blinks while zero reading is stored. Next, the display shows the calibration weight value. Place the specified calibration mass on the pan. [--C--] blinks while the reading is stored. The balance returns to the previous application mode and is ready for use.

Required Span Calibration Mass (sold separately)					
Capacity	Mass*	Capacity	Mass*	Capacity	Mass*
210g	200g	1600g - 2100g	1kg / 2lb	6400g - 10kg	5kg / 10lb
310g - 510g	300g	3100g - 4100g	2kg / 5lb	16kg - 20kg	10kg / 20lb
1100g	500g / 1lb	5100g	3kg / 5lb		

* Pound masses are used when calibrating in the lb unit.

3. OPERATION

All modes except for weighing must be activated in the User Menu before they are available, see Section 4.

3.1 Weigh Mode

1. Press and hold Mode until [WEIGH] (Weigh) is displayed.
2. If required, place an empty container on the pan and press Tare.
3. Add material to the container. The display shows the weight of the material.

3.2 Parts Counting Mode

This mode counts large numbers of items based on the weight of a reference count.

1. Place an empty container on the pan and press Tare.
2. Press and hold Mode until [Count] (Count) is displayed. [CLr.APW] (Clear Average Piece Weight) will then display.
3. Press No to use the stored APW. Proceed to step 6.
4. Press Yes to establish an APW. The balance will then display the stored sample size, i.e. [Put 10]. Press No or Back to toggle the choices (5, 10, 20, 50 or 100).
5. Put the indicated number of pieces on the pan then press Yes to calculate the APW. The display shows the piece count. Note: Press Function to view the current APW.
6. Add additional pieces until the desired count is reached.
7. To clear the stored APW press and hold Mode until [Count] is displayed. Press Yes when [CLr.APW] is displayed.

3.3 Percent Mode

This mode measures the weight of a sample as a percentage of a reference weight.

1. Place an empty container on the pan and press Tare.
2. Press and hold Mode until [PErcnt] is displayed. [CLr.rEF] (clear reference) will then display.
3. Press No to use the stored reference weight and proceed to step 6.
4. Press Yes to establish a new reference. Balance will now display [Put.rEF].
5. Add the desired reference material to the container. Press Yes to store the reference weight. The display shows 100%.
   Note: Press Function to view the current reference weight.
6. Replace the reference material with the sample material. The display shows the percentage of the sample compared to reference weight.
7. To clear the stored reference press and hold Mode until [PErcnt] is displayed. Press Yes when [CLr.rEF] is displayed.

3.4 Display Hold Mode

This mode holds the highest stable weight value for easy reference.

1. Press and hold Mode until [HoLd] is displayed.
2. Place samples to be weighed on the pan. When the balance detects the highest stable weight the "Hold Indicator" will blink and the displayed weight will not change.
3. Press Function to release the held weight value.

3.5 Accumulation Mode

This mode allows the user to store the total of a series of weight measurements. With an Interface Option the component weights and the total weight can be transmitted.

1. Press and hold Mode until [ACCUM] (Accumulate) is displayed. [CLr.Acc] (clear accumulate) will then display.
2. Press Yes to clear the stored value or No to continue adding to the stored total.
3. If required, place an empty container on the pan and press Tare.
4. Add first item, its weight is displayed. Press Function to store the weight, the "Accum" indicator will flash and the display will show the total weight.
5. Remove the first item and add the next item. The balance will display its weight. Press Function to store its weight. The "Accum" indicator will flash and the new total weight will be displayed.
6. Repeat step 5 for all of the items to be added. Note: While the display indicates zero, press Function to view the current total number of samples and the total weight.
7. To clear the stored total press and hold Mode until [ACCUM] is displayed. Press Yes when [CLr.Acc] is displayed.

3.6 Checkweigh Mode

This mode sets low and high weight limits for portion control processes.

1. Press and hold Mode until [CHECK] (Check) is displayed. [CLr.rEF] (clear references) will then display.
2. Press No to use the stored reference weight limits and proceed to step 5.
   Note: Press Function to view the low and high reference weight limits.
3. Press Yes to establish new reference values. The balance will then display [SEt. Lo]. Press Yes to view the "Low" limit value. Press Yes to accept or No to edit the "Low" limit value. The stored value then displays with the first digit highlighted [0.00.000 kg]. Repeatedly press No until the desired number appears. Press Yes to accept and highlight the next digit. Repeat until all the digits are correct. Press Yes to accept the "low" limit value, [SEt. H i] will be displayed.
4. Repeat the same procedure to accept or edit the "high" value.
5. Place sample material on the Pan. The "Accept" indicator will now show that the sample weight is within the acceptable range.
6. To clear the stored reference values press and hold Mode until [CHECK] is displayed. Press Yes when [CLr.rEF] is displayed.

4. SETTINGS

The User Menu allows the customizing of balance settings.
Note: Additional Sub-Menus may be available if Interface Options are installed. See Interface User Manual for the additional setting information.

4.1 Menu Navigation

User Menu:

Sub-Menus:	.C.a.l.	.S.e.t.u.p.	.M.o.d.e.	.U.n.i.t.	.E.n.d.
Menu Items:	Span Lin End	A-off Disply Bright IR.LEFT IR.RGHT End	Count Percnt Hold Accum Check End	ct, g, kg, grn, lb, oz, lb:oz, ozt, N, dwt, thk, tsg, ttw, tola, tical End	

Press and hold Menu until [MENU] (Menu) is displayed. When released the first sub-menu [.CAL.] (Cal) will be shown.
Press Yes to enter the displayed sub-menu or press No to advance to the next.
Selecting a sub-menu will display the first menu item. Press Yes to view the menu item setting or press No to move to the next menu item. When viewing the setting, press Yes to accept the setting, or press No to change the setting. When [End] is displayed, press Yes to return to the sub-menu selections or No to return to the first item in the current menu.

4.2 Cal Sub-Menu

- Span [SPAN] (yes, no) - Initiates a span calibration procedure (zero and span). A span calibration is important when initially setting up the balance.
- Lin [L in] (yes, no) - Initiates a linearity calibration procedure (zero, mid-point and span).

4.3 Setup Sub-Menu

The backlit LCD and (red) LED displays will have different menu items or settings based on the functionality.

- Auto Off [A-OFF] (on, off) - When Auto Off is set to “on” the balance will turn off automatically after 5 minutes of inactivity. Auto off is used to save battery power.
- Display [d iSPLY] (on, auto, dim (LED), off (LCD)) - This setting controls the LCD backlight or the LED digits; constant on, automatic turn off after 5 seconds of balance inactivity, dimming of the LED after 60 seconds of balance inactivity or LCD backlight always off.
- Bright [br iGht] (hi, mid, low) - This setting controls the brightness of the LED display. LCD models will not see this menu item.
- IR Sensor Left [ir.LEFt] / Right [ir.rGht] (Off, Tare, Function, Print, Zero, Display) - These settings determine the role of the IR Sensors. “Zero”, “Print”, “Function” or “Tare” allows the IR sensor to act the same as the related button. “Display” activates the display if Display-Auto is set. “O
- ff” disables the sensor.

4.4 Mode Menu

This sub-menu activates modes so they will be available for use with the Mode button. Weigh mode is always active.

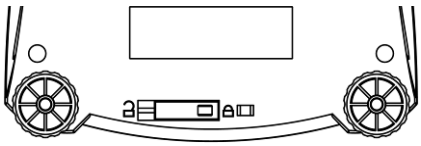
- Parts Count [**Count**] (on, off) - Set on for the mode to be active.
- Percent [**Percnt**] (on, off) - Set on for the mode to be active.
- Hold [**Hold**] (on, off) - Set on for the mode to be active.
- Accumulate [**ACCUM**] (on, off) - Set on for the mode to be active.
- Check Weigh [**CHECK**] (on, off) - Set on for the mode to be active.

4.5 Units Menu

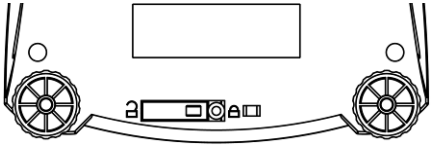
This sub-menu activates units so they will be accessible with the Units button. The units in the menu must be turned "on" to be active. The ounce (oz) and pound:ounce (lb:oz) units include the option of decimal [**dEc**] or fractional [**FrAc**] readouts. Due to different agency requirements the grain unit has two icon display options, gr or grn.
Note: Available units and modes vary by model and local regulations.

4.6 Sealing access to balance settings

The Menu Lock switch limits changes to the Cal, Setup, Mode and Unit menus. The switch in type approved models may set some balance settings as required by the approval agency. The switch may be secured using paper seals, wire seals or plastic ties.



Locked



Unlocked

5. MAINTENANCE

5.1 Troubleshooting

The following table lists common problems and possible causes and remedies.
If the problem persists, contact OHAUS or your authorized dealer.

Symptom	Possible Cause	Remedy
Cannot turn on	No power to balance	Verify connections and voltage
Poor accuracy	Improper calibration Unstable environment	Perform calibration Move balance to suitable location
Cannot calibrate	Unstable environment Incorrect calibration weight	Move the balance to suitable location Use correct calibration weight
Cannot access mode	Mode not enabled	Enter menu and enable mode
Cannot access unit	Unit not enabled	Enter menu and enable unit
Lo rEF	Reference weight is too low	Increase reference weight.
rEF Err	Parts counting– sample weight <1d.	Shows error - exits mode or goes to [**CLr.APU**].
Err 3.0 CAL	Incorrect calibration weight	See section 2.5 for correct weights
Err 4.4 FULL	RS232 buffer is full	Set Handshake on, see Interface User Manual.

Err 8.1 ¯LoAd¯	Power on zero range exceeded	Clear pan, check Shipping Lock setting
Err 8.2 _LoAd_	Power on zero under range	Install pan, check Shipping Lock setting
Err 8.3 ¯LoAd¯	Overload (>cap+9e)	Load exceeds balance maximum capacity
Err 8.4 _LoAd_	Under load	Reading below min. range - Re-install pan.
Err 8.6 999999	Displayed value >999999	Result exceeds display capability.
Err 9 dAtA	Internal data error.	Contact an authorized service agent
Err 13 mEm	Fail to write EEPROM.	Contact an authorized service agent
Err 53 CSum	Invalid checksum data	Contact an authorized service agent

5.2 Service Information

If the troubleshooting section does not resolve or describe your problem, contact your authorized OHAUS service agent. For service assistance or technical support in the United States call toll-free 1-800-526-0659 between 8:00 AM and 5:00 PM EST. An OHAUS product service specialist will be available to provide assistance. Outside the USA, please visit our web site, www.ohaus.com to locate the OHAUS office nearest you.

5.3 Accessories

Rechargeable Battery Kit	83032106 (NVL, NVT)		
RS232 Interface Kit	83032107 (NV, NVL, NVT)		
USB Interface Kit	83032108 (NV, NVL, NVT)		
Ethernet Interface Kit	83032109 (NV, NVL, NVT)		
In-Use Cover Kit	83032223 (NV)	83032222 (NVL)	83032221 (NVT)
Carrying Case Kit	83032226 (NV)	83032225 (NVL)	83032224 (NVT)
Printers and Cables	Contact OHAUS		

6. TECHNICAL DATA

The technical data is valid under the following ambient conditions:
Ambient temperature: 10°C to 40°C, Approved models (M) 0°C to 40°C
Relative humidity: 20% to 85% relative humidity, non-condensing
Height above sea level: Up to 4000 m
Operability: assured at ambient temperatures between 0°C and 40°C
Power: AC Adapter – 12VDC 420mA output, 4 batteries or rechargeable battery
Protection: dust and water
Pollution degree: 2
Installation category: Class III
EMC: See Declaration of Conformity

6.1 Specifications

Typical specifications:

Stabilization Time	≤1 seconds
Tare range	To capacity by subtraction
Application Modes[1]	weigh, percent, parts count, check weigh, accumulate, hold
Weighing Units	Non-Approved: ct, g, kg, grn, lb, oz, lb:oz, ozt, N, dwt, tael (3), tola, tical M models: g, kg, ct N models: g, kg, ct, lb, oz, ozt, dwt, grn
AC Power	AC Adapter (supplied)- 12 VDC or 12VAC, 420 mA
Battery Power	NV: 4 AA (LR6) batteries (not supplied) NVL, NVT: 4 C (LR14) batteries (not supplied) or rechargeable battery option
Calibration	Digital with external weight
LCD Display	6-digit 7-segment LCD with white LED backlight
LED Display	6-digit 7-segment LED
Display Size	20 mm / 0.78" digits
Keypad	4-button overlay plus two programmable IR sensors
Ingress Protection	IP43 (NVT and NVL models)
Pan Size (W x D)	NV: 190 mm x 138 mm NV212: Ø120mm NVL: 194 mm x 203 mm NVT: 230 mm x 174 mm
Net Weight[2]	NV: 0.9 kg / 2.2 lb NVL: 1.5 kg / 3.3 lb NVT: 1.5 kg / 3.3 lb
Shipping Weight[2]	NV: 1.4 kg / 3.1 lb NVL: 2.3 kg / 5.1 lb NVT: 2.3 kg / 5.1 lb

Note 1: Some application modes are restricted in Approved models.
Note 2: /1 and /3 models add 0.5kg / 1lb

Non-Approved Models:

Model[1]	Capacity	Readability (d)	Repeatability	Linearity	Span Cal. Wt.	Lin. Cal. Wts.
NV212	210g	0.01g	1d	±2d	200g	100g, 200g
NV511	510g	0.1g	1d	±2d	300g	300g, 500g
NV1101	1100g	0.1g	1d	±2d	500g	500g, 1000g
NV2101	2100g	0.1g	1d	±2d	1kg	1kg, 2kg
NV4101	4100g	0.2g	1d	±2d	2kg	2kg, 4kg
NV5101	5100g	0.5g	1d	±2d	3kg	3kg, 5kg
NVL511	510g	0.1g	1d	±2d	300g	300g, 500g
NVL1101	1100g	0.1g	1d	±2d	500g	500g, 1000g
NVL2101	2100g	0.1g	1d	±2d	1kg	1kg, 2kg
NVL5101	5100g	0.5g	1d	±2d	3kg	3kg, 5kg
NVL10000	10000g	1g	1d	±2d	5kg	5kg, 10kg
NVL20000	20000g	1g	1d	±2d	10kg	10kg, 20kg
NVT1601	1600g	0.1g	1d	±2d	1kg	1kg,1.5kg
NVT3201	3200g	0.2g	1d	±2d	2kg	2kg, 3kg
NVT6401	6400g	0.5g	1d	±2d	5kg	3kg, 6kg
NVT10001	10000g	0.5g	1d	±2d	5kg	5kg, 10kg
NVT16000	16000g	1g	1d	±2d	10kg	10kg, 15kg

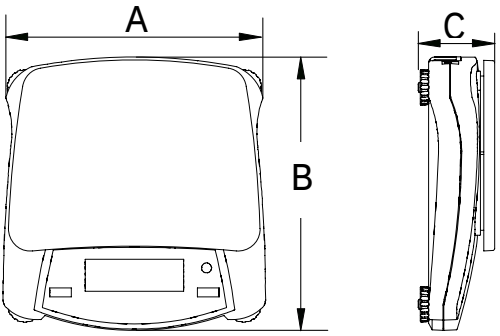
Note 1: /1 = Factory installed rechargeable battery option
/2 = LED display
/3 = LED display with factory installed rechargeable battery option

Approved Models:

Model[1,2]	Max=	e=	Approval Class	Span Cal. Wt.	Lin. Cal. Wts.
NV311	310g	0.1g	III	200g	200g, 300g
NV3100	3100g	1g	III	2kg	2kg, 3kg
NVT1601	1600g	0.5g	III	1kg	1kg,1.5kg
NVT3200	3200g	1g	III	2kg	2kg, 3kg
NVT6400	6400g	2g	III	5kg	3kg, 6kg
NVT16000	16000g	5g	III	10kg	10kg, 15kg

Note 1: M = EC Type approved
N = NTEP and Measurement Canada approved
Note 2: /1 = Factory installed rechargeable battery option
/2 = LED display
/3 = LED display with factory installed rechargeable battery option
Example: NVT3200M/3

6.2 Drawings



	A	B	C
NV	204 mm / 8 in.	212 mm / 8.4 in.	58 mm / 2.3 in.
NVL	204 mm / 8 in.	282 mm / 11.1 in.	74 mm / 2.9 in.
NVT	240 mm / 9.5 in.	250 mm / 9.8 in.	74 mm / 2.9 in.

6.3 Compliance

Compliance to the following standards is indicated by the corresponding mark on the product.

Mark	Standard
CE	This product conforms to the EMC directive 2004/108/EC, the Low Voltage Directive 2006/95/EC and the Non-automatic Weighing Instrument Directive 2009/23/EC. The Declaration of Conformity is available online at www.OHAUS.com.
	AS/NZS4251.1 Emission; AS/NZS4252.1 Immunity

Important notice for verified weighing instruments

Weighing Instruments verified at the place of manufacture bear one of the preceding marks on the packing label and the green 'M' (metrology) sticker on the descriptive data plate. They may be put into service immediately.

Weighing Instruments to be verified in two stages have no green 'M' (metrology) on the descriptive data plate and bear one of the preceding identification marks on the packing label. The second stage of the initial verification must be carried out by an authorized and certified service organization established within the European Community or by the National Notified Body.

The first stage of the initial verification has been carried out at the manufacturers work. It comprises all tests according to the adopted European standard EN 45501:1992, paragraph 8.2.2.
If national regulations limit the validity period of the verification, the user of the weighing instrument must strictly observe the re-verification period and inform the respective weights and measures authorities.

Disposal

In conformance with the European Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements.
The Batteries Directive 2006/66/EC introduces new requirements from September 2008 on removability of batteries from waste equipment in EU Member States. To comply with this Directive, this device has been designed for safe removal of the batteries at end-of-life by a waste treatment facility.

Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment. If you have any questions, please contact the responsible authority or the distributor from which you purchased this device.

Should this device be passed on to other parties (for private or professional use), the content of this regulation must also be related.

Disposal instructions in Europe are available online at www.ohaus.com. Choose your country, then search for "WEEE."

Thank you for your contribution to environmental protection.

FCC Note

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Industry Canada Note

This Class B digital apparatus complies with Canadian ICES-003.

ISO 9001 Registration

In 1994, OHAUS Corporation, USA, was awarded a certificate of registration to ISO 9001 by Bureau Veritus Quality International (BVQI), confirming that the OHAUS quality management system is compliant with the ISO 9001 standard's requirements. On May 15, 2003, OHAUS Corporation, USA, was re-registered to the ISO 9001:2000 standard.

Limited Warranty

OHAUS products are warranted against defects in materials and workmanship from the date of delivery through the duration of the warranty period. During the warranty period OHAUS will repair, or, at its option, replace any component(s) that proves to be defective at no charge, provided that the product is returned, freight prepaid, to OHAUS. This warranty does not apply if the product has been damaged by accident or misuse, exposed to radioactive or corrosive materials, has foreign material penetrating to the inside of the product, or as a result of service or modification by other than OHAUS. In lieu of a properly returned warranty registration card, the warranty period shall begin on the date of shipment to the authorized dealer. No other express or implied warranty is given by OHAUS Corporation. OHAUS Corporation shall not be liable for any consequential damages.

As warranty legislation differs from state to state and country to country, please contact OHAUS or your local OHAUS dealer for further details.

Product Registration

Protect your investment. Register your product with your local OHAUS dealer.

Test Equipment Depot - 800.517.8431 - 99 Washington Street Melrose, MA 02176 - TestEquipmentDepot.com